Exchange Rate Policy in Small Rich Economies

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Introduction

- Iceland's recent experience highlights dilemma facing small economies
  1. For reasons we do not fully understand, small rich economies *arguably* outperform their larger cousins in terms of economic performance – on average.
  2. For reasons we do understand, small rich economies *certainly* face more volatility than their larger cousins. Additionally small rich economies pay a higher per capita cost to create institutions to deal with that volatility
- Question: Can the choice of exchange rate regime influence these outcomes – particularly in terms of dealing with volatility?

Our Sample

- Sample: economies with population less that 3 million and income per capita greater than $11,500 (PPP basis) both 2007. Iceland: population 309,000 income $40,000 (approx)
- Annual data from 1970 to 2008

Andorra	Antigua	Aruba	Bahamas
Bahrain	Barbados	Bermuda	Brunei
Caymans	Cyprus	Equatorial Guinea	Estonia
Faroe Islands	French Polynesia	Greenland	Grenada
Guam	Guernsey*	Iceland	Isle of Man*
Jersey*	Latvia	Liechtenstein	Luxembourg
Macau	Malta	Mauritius	Netherlands Antilles
New Caledonia	Oman	Qatar	San Marino
Seychelles	Slovenia	St. Kitts & Nevis	St. Lucia
Trinidad & Tobago			

Small Versus Large Economies

- Small countries have greater idiosyncratic volatility than large.
- Despite openness + diversifiable risk, risk sharing is ineffective

		Large	Small
Openness	Goods Exports+Imports (% of GDP)	70.2	110.5**
Trade Specialization	Herfindahl Index of Export Industries	0.18	0.40**
Economic Volatility	σ Terms of Trade	5.8	9.2*
	σ GDP growth	3.7	5.7**
	σ consumption growth	3.1	5.7**
Government Scale	Government Consumption (% of GDP)	17.7	19.0
	Government Effectiveness (index value)	1.07	0.77
Risk Sharing	Absolute Current Balance (% of GDP)	4.7	14.0**
	Growth Correlation with World Growth	0.46	0.30**
	Growth Covariance with World Growth	1.76	1.74
Economic Performance	Average Growth	3.5	4.5*
	Average Inflation	18.7	6.5
Income	GDP per capita (2008 $ PPP)	31,000	35,000

Defining Currency Regimes

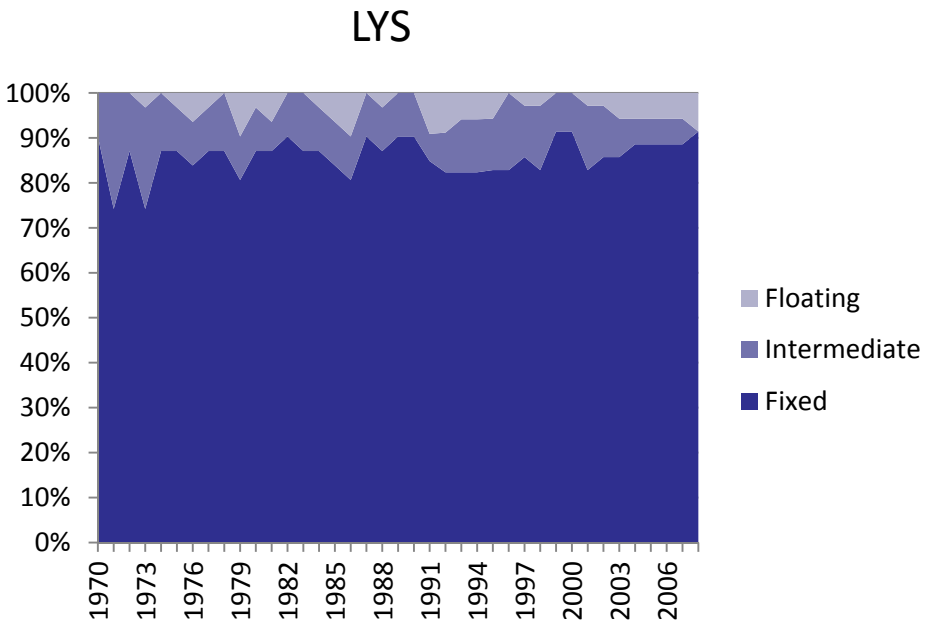
- We favour *de facto* over *de jure* classification of regimes

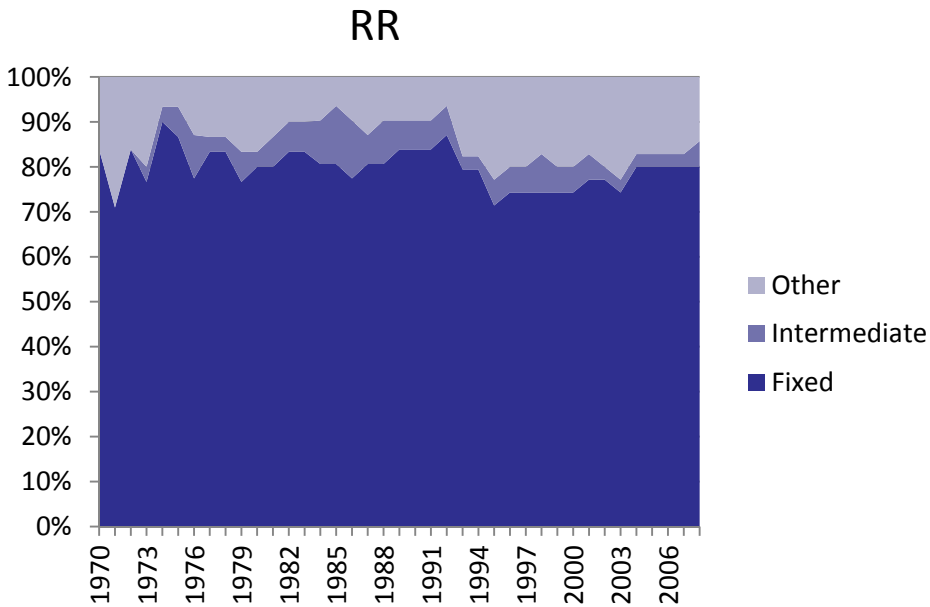
1. *Levy-Yeyati and Sturzenegger* 2003 (LYS) Combine data on exchange rates and reserves using cluster analysis classify countries into three exchange rate regimes: fixed; intermediate; and floating

2. *Reinhart and Rogoff* 2004 (RR) Rely on the movements of market-determined exchange rates (inc. black market rates) Their 'coarse' classification has five bins: fixed; narrow crawling pegs; wide pegs/managed float; floating; and "freely falling" with high inflation. In practice, the last three categories appear rarely in our data set so we merge these into the wide pegs/managed float classification.

Distribution of Regimes

- Noticeable preference for fixed regimes
- Some evidence of a disappearing middle





Determinants of Regime Choice

- Probit regression 1= fixed, 2= intermediate 3=floating
- Traditional OCA variables weak but small country variables more successful

Independent variables	LYS classification	RR classification
Openness (exports +imports as share of GDP)	-0.12 (0.15)	0.01 (0.03)
Trade share of largest trading partner	-0.62* (0.31)	-0.05 (0.25)
Business Cycle Correlation with trading partners	-0.12 (0.20)	-0.56** (0.16)
Log of Population	0.38** (0.06)	0.35** (0.04)
Political Independence Dummy (1=not independent)	-1.23** (0.16)	-0.74** (0.10)
Years since independence	-0.44** (0.07)	-0.55** (0.06)

Economic Performance by Regime

- Fixed regimes have lower exchange rate volatility and lower inflation.

	LYS classification			RR classification		
	fixed	intermediate	Float	fixed	intermediate	Other
Average growth	4.1%	4.7%	3.6%	4.2%	4.3%	4.1%
Growth volatility	5.3%	5.9%	3.9%	5.4%	5.3%	4.4%
Average inflation	6.0%	8.3%**	15.3%**	5.7%	6.5%**	10.2%**
Inflation volatility	6.7%	11.5%**	14.2%**	5.7%	5.5%**	14.3%**
EER volatility	5.5%	15.0%**	23.0%**	6.1%	8.5%**	16.5%**
REER volatility	6.9%	9.3%**	18%**	6.7%	8.0%**	12.8%**
REER/output gap coefficient	-2.6%††	0.0%	-0.4%	-0.5%††	0.0%	-8.0%††
GDP per capita	36700	28300**	27300**	36000	34500	28000**

Measuring Fundamentals

- Is the higher exchange rate volatility of floaters a symptom of greater volatility of fundamentals?

Start with a simple monetary model

$$m_t - p_t = \beta y_t - \alpha i_t + \varepsilon_t \qquad (1)$$

$$p_t = e_t + p^*_t + v_t \qquad (2)$$

Assume an identical foreign analogue to (1). Subtract from (1) and substitute into (2)

$$e_t = (m - m^*)_t - \beta(y - y^*)_t + \alpha(i - i^*)_t - (\varepsilon - \varepsilon^*)_t - v_t$$

Implies a volatility trade-off. If the exchange rate is fixed, then (ε_t or v_t) shocks translate into volatile money, output or interest rates

Fundamentals and Volatility

- Fundamentals are similar across regimes but exchange rate volatility varies considerably.

		LYS classification			RR classification		
		exchange rate volatility	fundamental volatility (M1 based)	fundamental volatility (M2 based)	Exchange rate volatility	fundamental volatility (M1 based)	fundamental volatility (M2 based)
fixed	Trade-weighted basis	0.06	0.16	0.12	0.06	0.16	0.12
intermediate		0.12**	0.17	0.14	0.09	0.15	0.11
floating		0.18**	0.17	0.14	0.15**	0.20**	0.17**
fixed	Dollar basis	0.05	0.16	0.12	0.06	0.16	0.11
Intermediate		0.14**	0.17	0.13	0.08**	0.14	0.11
floating		0.16**	0.19	0.14	0.16**	0.22**	0.18**

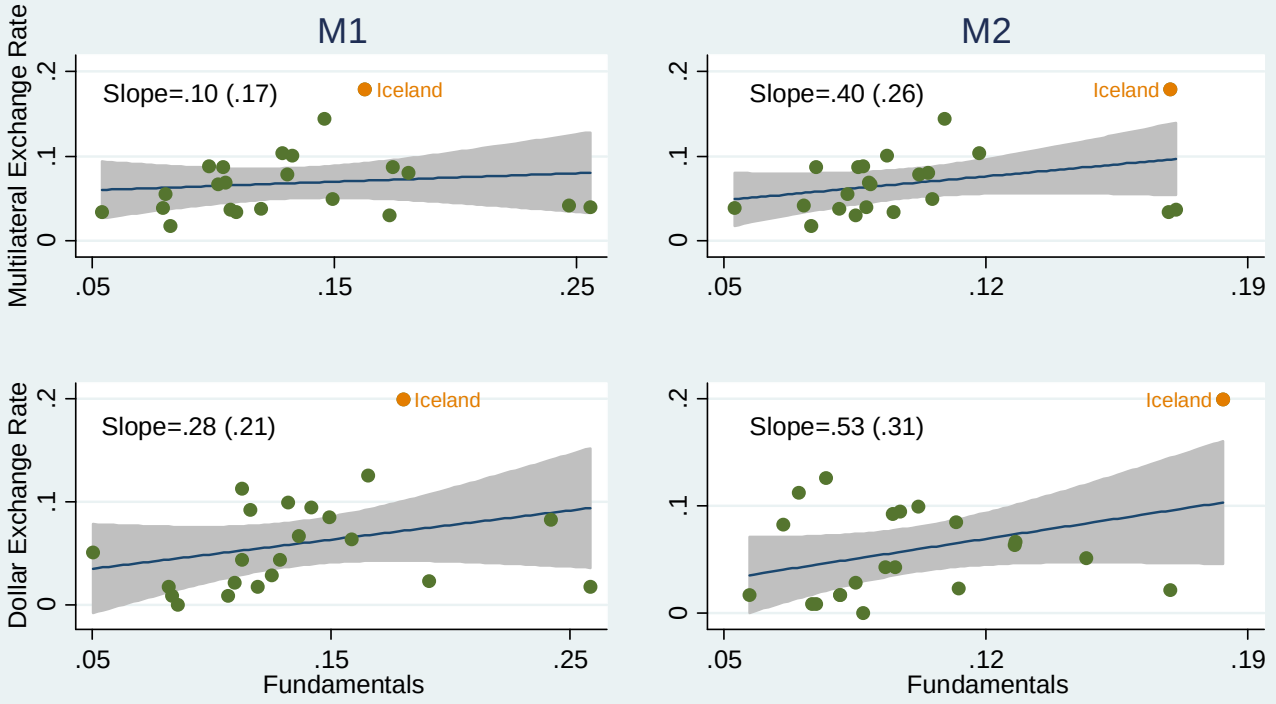
α *and* $\beta = 1$, *so fundamentals* $= [(m - m^*)_t - (y - y^*)_t + (i - i^*)_t]$

Fundamentals and Volatility

Volatility: Exchange Rates Against Fundamentals

Standard Deviations of Annual Growth Rates, 1971-2008 for 22 Countries

Fundamentals = (m-m*)-(y-y*)+(i-i*)



Cross-Sectional Regression with +/- 2se CI shown. Equatorial Guinea dropped as outlier.

Choice of Fixed Regime

- Using RR 'fine' classification (merging *de facto* peg and narrow band) and applying to LYS also
- Probit Regression Currency Union=1, Currency Board/Peg = 2 De Facto Peg/Narrow Band = 3

Independent variables	LYS classification	RR classification
Openness (exports +imports as share of GDP)	-0.12 (0.15)	0.08** (0.02)
Trade share of largest trading partner	-0.14 (0.38)	0.13 (0.41)
Business Cycle Correlation with trading partners	-0.56** (0.16)	-1.00** (0.19)
Log of Population	0.69** (0.06)	0.66** (0.07)
Political Independence Dummy (1=not independent)	-1.16** (0.12)	-1.23** (0.13)
Years since independence	-0.36** (0.08)	-0.39** (0.08)

Economic Performance by Fixed Regime

	LYS classification			RR classification		
	Currency union	Currency Board/Peg	defacto peg/ narrow band	Currency union	Currency Board/Peg	defacto peg/ narrow band
Average growth	3.2%	4.4%**	4.2%*	3.2%	4.4%**	4.5%**
Growth volatility	3.2%	5.8%**	3.7%	3.2%	5.8%**	3.1%
Average inflation	6.2%	5.5%	6.8%	6.0%	5.6%	5.0%
Inflation volatility	5.2%	6.4%**	6.8%**	5.1%	5.9%**	4.7%
REER volatility	4.8%	7.2%**	6.5%**	3.8%	7.3%**	5.9%**
REER/output gap coefficient	-1.3%††	-0.1%†	-0.4%†	-1.3%††	-0.1%†	-0.4%†
Probability of Exit (per year)	0.0%	3.0%**	10.5%**	0.0%	3.2%**	12.7%**
GDP per capita	55200	30000**	45600*	64500	28600**	46400**

Conclusion

- Our results indicate that the choice of exchange rate regime has little impact of economic volatility (Some effect on inflation?)…
- …But choice of exchange rate regime has a significant impact on exchange rate volatility…
- …Thus small economies preference for fixed regimes makes sense
- Within fixed regimes, stricter regimes (e.g. currency unions) have significant advantage of longevity.
- But fixed regimes do not solve the volatility problem for small economies – perhaps more institutions for risk sharing?